

Nr. 204 | April 2006

## Conditional yes to new GM plants

Citizens' jury positive towards GM plants that manufacture medicine and industrial ingredients

- Benefits health, environment and economy** > **The majority of the 16 participants in the citizens' jury responded positively to the opportunities presented by the new GM plants and their financial potential. Therefore, they recommended that it would be beneficial to grow them in Denmark. A few arguments discussed were that the production of new types of medicine could take place without the risk of transferring diseases, and that plants could deliver raw materials for industrial use in a more environmentally friendly way. The positive attitude — something that surprised a number of actors — was due in part to the citizens' confidence in present regulations and controls being generally sufficient to limit the risks. However, the citizens also specified conditions for growing the new GM plants in Denmark including: the impact on ground water should be part of the risk assessment; GM plants for industrial use must not pollute more than traditional production; and that GM products must be labelled.**
- Production of medicine and industrial materials** >
- Impact on ground water must be examined** >
- Must not pollute more than the alternatives** >
- All GM products must be labelled** >

*From the 28th of April to the 2nd of May, 16 citizens were assembled to discuss the new GM plants. They concluded the discussions by voting upon the arguments, conditions and recommendations that expressed their attitude the best. This newsletter informs of the voting results, which can be studied in full in the final document of the citizens' jury.*

Genetically modified plants (GM plants) can be used to produce medicine and industrial raw materials and to change for example the appearance and durability of our ornamental plants. If this is done with care, we should not limit the possibilities of taking part in this development. This is the majority opinion the 16 citizens who participated in the Danish Board of Technology's GM plants assessment. They have voted upon which advantages and disadvantages they consider to be critical, and stipulated conditions that the "new" GM plants must meet. For example, one such condition was that the plants used should be non-food crops.

The majority of the citizens' jury found that the new GM plants have potential. The arguments for GM plants include improvements with regard to the environment and public health, financial advantages and business opportunities. The most important argument against GM plants is the risk of unintentional spreading of foreign or undesirable characteristics. But the majority found that we should not be afraid of growing of GM plants considering existing regulations – including the act on co-existence – and

approval procedures, if the approval procedures are adapted in the case of new knowledge.

This can be seen from the final document of the citizens' jury, which was presented at a conference in the Danish Parliament building on the 2nd of May. At this conference, six representatives from political parties, the industry, the Danish Agricultural Council, the Danish Society for Nature Conservation and the Danish Consumer Council commented on the result of the citizens' vote.

The citizens' rather positive assessment of the new GM plants was a surprise to many participants at the conference. Instead of debating the desirability of the plants, debate focused on the conditions necessary to monitor and control the growth, refinement, and use of these plants. These conditions are the main outcome of the citizens' jury process.

An important condition for allowing the new plants is that the environmental consequences of irresponsible practices must be assessed. Secondly, the growth of the new plants should not pollute more than existing modes of production, particularly concerning fertilizer or pesticide usage. However, the

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citizens' jury does not see any reason for alarm. The voting results reflect that present legislation and administration is considered adequate to limit the risks, but several citizens argue that any impact on ground water and soil should be part of a future risk assessment process.

Thus, the most important message when we, as a society, are to decide whether we wish to grow the new GM plants is not that legislation should be tightened, but that there should be more focus on public education and information about the new GM plants. The citizens' jury experienced that the knowledge they achieved during the process had an impact on their own attitudes; this must also be the case for the rest of the population. "As far as we are concerned, our knowledge now compared to our knowledge when we started has given us a much more nuanced view of GM plants", said one of the members of the citizens' jury at the conference.

## **New genetically modified plants for new purposes**

Within the next ten years, we may see GM plants in Danish fields with completely different purposes than the GM food and feed crops that we usually discuss.

Today, GM plants are developed for the production of medicines to treat arthritis, HIV and cancer, and a remedy against tooth cavities, to name a few. The producers of GM plants expect to be able to reduce the production costs of certain expensive medicines, such as biological treatment of arthritis, and in other cases to create new possibilities for treatment.

Other plants are genetically modified to be little bio-factories that produce raw materials for industrial use. For example, the EU is close to approving a new form of potato for the paper industry. The starch from the potato can be rendered with much less energy consumption. Plants that produce medicine for the treatment of HIV and cancer however, belong more to the more distant future. Finally, GM ornamental plants such as blue roses or durable harebells can be expected within the next ten years.

Read more: [www.tekno.dk/gmp](http://www.tekno.dk/gmp)

## **Yes to medicine plants – in closed environments**

The voting results show that the arguments for GM plants for the production of medicine received more votes than the arguments against them. Most of the citizens agreed that GM plants make it possible to develop new and less expensive types of medicine and that they can limit the risk of transferring diseases in comparison with the use of animal and human cells.

However, if the production of medicine includes the use of human or animal genes, it is a high priority for the citizens that there are strict requirements for approval of new products, and that the production takes place in closed environments.

A member of the citizens' jury stressed that like today, risk assessment must be on a case-by-case basis to decide if the GM plant must be grown in green-houses.

## **Industrial plants are received positively – if they are beneficial to the environment**

It was a surprise to several of the actors at the presentation of the citizens' jury's final document that

the industrial crops were as positively as plants producing medicine; something that could be considered more "necessary". The final document showed that the majority of citizens ranked the following two issues above the rest: Industrial plants have potential for replacing present production methods with more environmentally sustainable ones, Denmark has great potential within GM plants research, and that this potential should be more fully utilized.

Among the participants in the GM debate, Gunver Bennekou from the Danish Society for Nature Conservation expressed her surprise that the jury had simply accepted the argument that GM industrial plants resulted in environmental improvements. She stressed that even though there could be a benefit from for example poplar trees with less lignin for paper production, there would be a number of other environmental impacts during growth and processing that could easily result overall environmental degradation.

The citizens called attention to the final document, where the most important condition for the use of industrial plants is that they do not pollute more than the corresponding traditional modes of production.

## **GM ornamental plants can be morally acceptable**

During the presentation in the parliament building, several of the participants in the citizens' jury expressed that they had started with the perception that the advantages inherent in GM ornamental plants were not "important" enough to justify their use. But as discussion proceeded, two assessments became important to their decision: Firstly, they could create growth and jobs and in some cases environmental gains, and secondly, the legislation and control is satisfactory. Based on this, several of the citizens believed that the society should not prevent the growing of these plants in Denmark, as long as the environmental impact is not increased in comparison with traditional production.

It appeared from the citizens' final document that many of the citizens voted against the use of genetically modified herbicide-tolerant grass, which can for example be used for golf courses, "as there is a significant risk of a spread to cultivated areas as well as to other vegetation".

## **Citizens' jury – how were the results achieved?**

16 regular citizens have been assembled for 5 days, where they could enter into dialogue with a number of experts. Based on this, the citizens formulated arguments, conditions and recommendations for how we should approach the challenges and opportunities that the GM plants can offer.

The citizens were not required to reach a consensus, but asked instead to prioritise the arguments presented and then vote for those that they considered most important.

It was an important argument in the assessment of ornamental plants that animal and human genes are typically not used in this area. Some of the citizens believe that we should not have as many reservations, as long as it is a matter of plant-to-plant genetic modification.

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# Fra rådet til tinget

Newsletter from The Danish Board of Technology to the Danish Parliament

## The project has been planned in cooperation with a planning group consisting of:

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## Sources:

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Part 1: Drug-production (August 2003)  
Part 2: Grasses, Flowers, Trees, Fibre Crops and Industrial Uses (March 2004)  
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Harvest on the Horizon: Future Uses of Agricultural Biotechnology (Pew initiative, September 2001)  
<http://pewagbiotech.org/research/harvest/>;

Fieldwork: weighing up the costs and benefits of GM crops. Analysis papers (UK Cabinet Office, July 2003)  
<http://www.pm.gov.uk/files/pdf/GManalysis1234.pdf>

## Experts during the citizens' jury days

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*The newsletter "Fra rådet til tinget" is published by the Danish Board of Technology. Editor Ida Leisner. This issue of "Fra rådet til tinget" has been written by freelance journalist Morten Andreassen.*

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